



MODULE 1

Introduction to Protecting Historic Resources from Floods

Weather It Together: Protecting Maryland's Historic Places from Natural Hazards

- MHT's Program dedicated to helping protect historic places, archeological sites, and cultural landscapes from the effects of natural hazards
- Provides technical assistance to state agencies and local government with hazard mitigation planning, disaster response and recovery, and adaptation planning

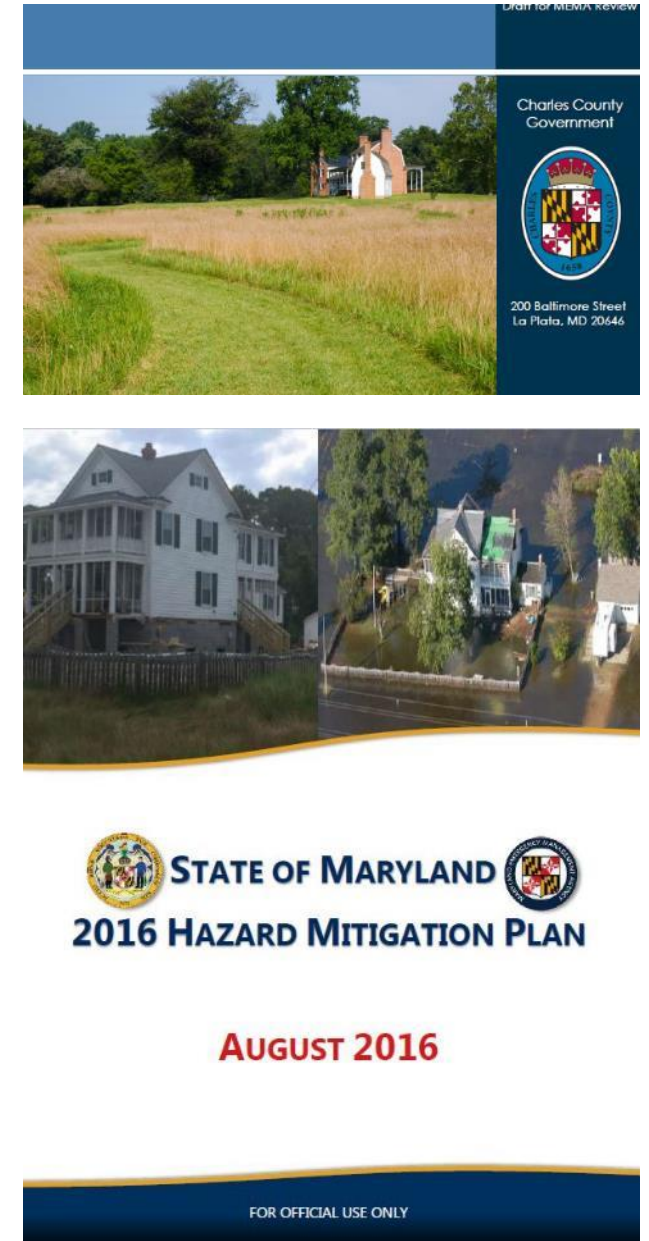


Hazard Mitigation Planning

Federal Disaster Mitigation Act of 2000

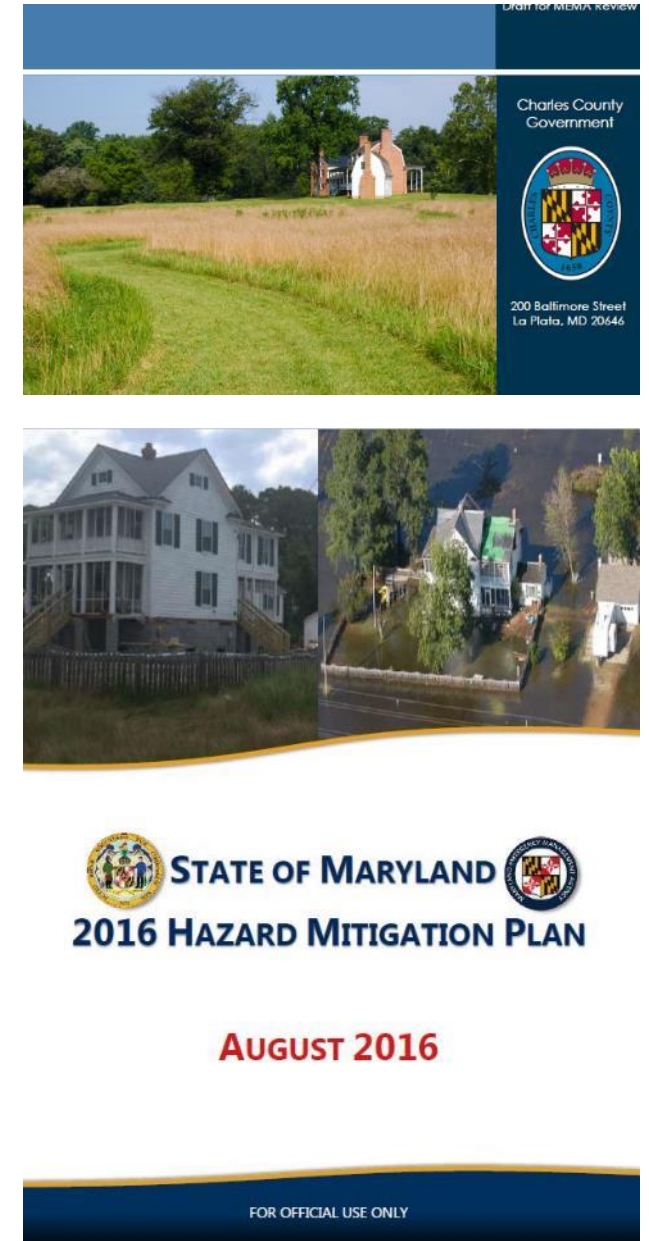
Requires state, tribal, and local governments to develop a natural hazard mitigation plan that must be updated every five years

FEMA-approved hazard mitigation plan establishes eligibility for FEMA's Hazard Mitigation Assistance Program for funding hazard mitigation plans and projects



Hazard Mitigation Planning

- Hazard Mitigation – Any sustained action taken to reduce or eliminate the long-term risk to life and property from hazards
- Note the use of the terms “sustained” and “long-term”
- Mitigation must be an ongoing process and the action must have a real, lasting effect and not be a short-term fix



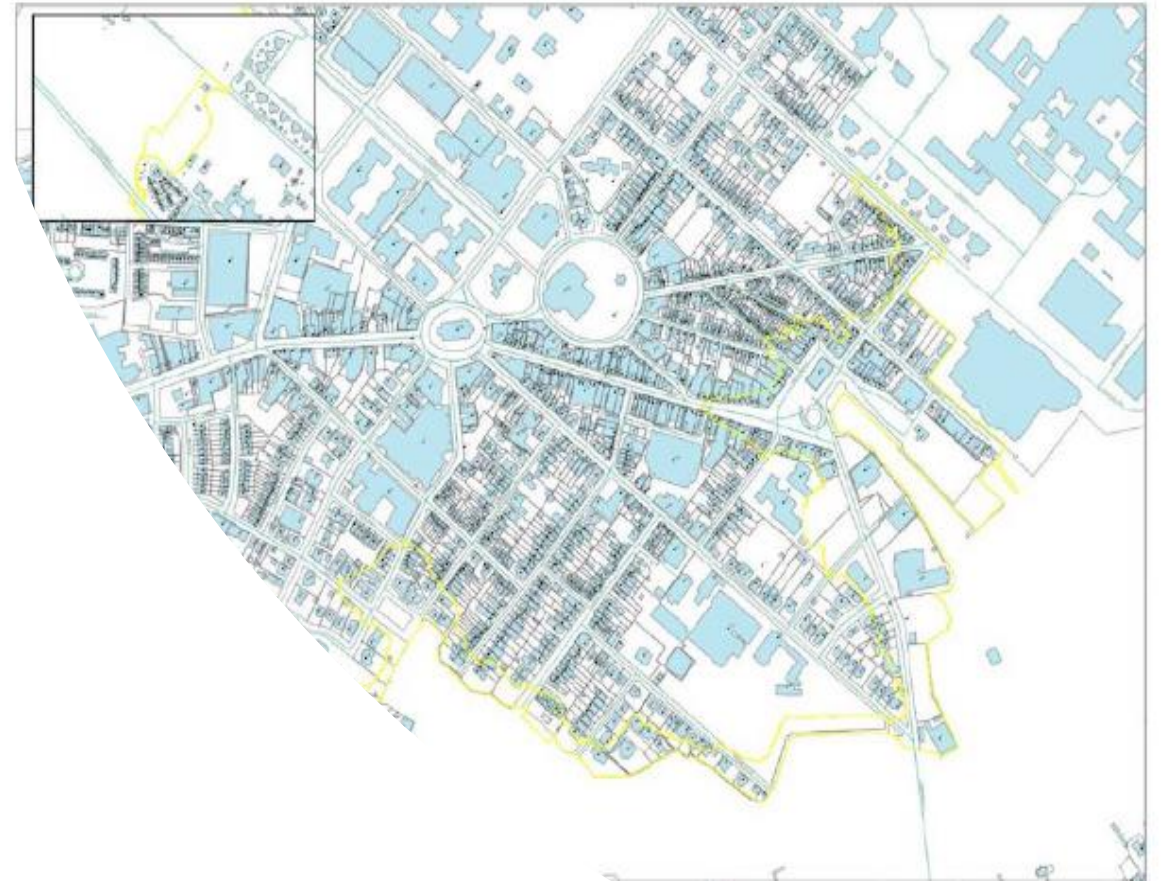
Hazard Mitigation Plans for Cultural Resources

- The City of Annapolis is one of the first communities to use FEMA's planning process to create a hazard mitigation plan for their historic resources
- MHT's Weather It Together Program is based inspired by the work conducted by the City of Annapolis
- MHT will share lessons learned and develop best practices based on the City's work and that of other historic communities in Maryland, the U.S. and abroad

WEATHER IT TOGETHER: A Cultural Resource Hazard Mitigation Plan

for the

City of Annapolis



What are Historic Places?

- Buildings, structures, objects, sites, and archeological sites
- Traditional cultural properties
- Museums, archives

All of these are also known collectively as “cultural resources”



Why Include Historic Places in Hazard Mitigation Planning?



Historic Places are Assets too!

When floodplain managers, emergency managers, and environmental planners think about assets, they think about critical facilities, infrastructure, and economic assets.

So why plan to protect historic places from flooding and other hazards?

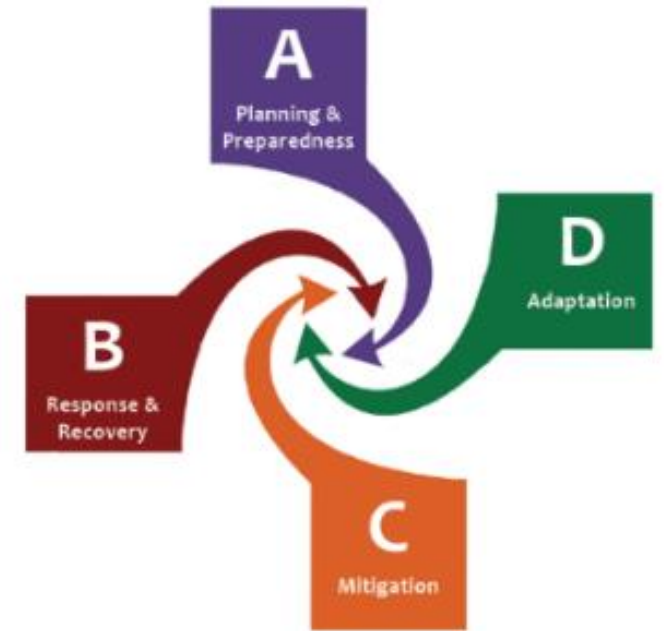
Historic places are assets too.

- Non-renewable assets – when lost, they are gone forever
- Social assets – tangible evidence of shared heritage
- Economic assets - through tourism, restoration/rehabilitation (especially when work is performed by local firms using locally sourced materials), drivers of revitalization



Hazard Mitigation Planning: MHT's *Flood Mitigation Guide*

- **Purpose** A “road map” to aid local governments and preservation advocates to integrate historic properties into their local hazard mitigation plans to protect against flood hazards
- **Audience** Anyone in state or local government attempting to meet combined goals of historic preservation and emergency management
- **Organization** Follows the emergency management cycle and also addresses “Adaptation”



Hazard Mitigation Planning Process in the Flood Mitigation Guide

The process in the *Flood Mitigation Guide* is a suggested method for organizing and analyzing information on historic places and their risk to natural hazard to develop mitigation goals, objectives, and actions

The planning process, despite it's appearance, is not always a linear process

Communities will already have different pieces of the process completed



Recruit a Team

When beginning the planning process, consider the formation of a dedicated team to usher historic places through the process

- Not all members need to be familiar with historic preservation
- Technical experts from different disciplines
- Participants from several local government departments
- Nonprofit partners
- State agency partners too



Note: The blue clouds identify the chapter, section, and subsection in MHT's *Flood Mitigation Guide* where you'll find more information on this topic

Historic Places – What's the Risk?

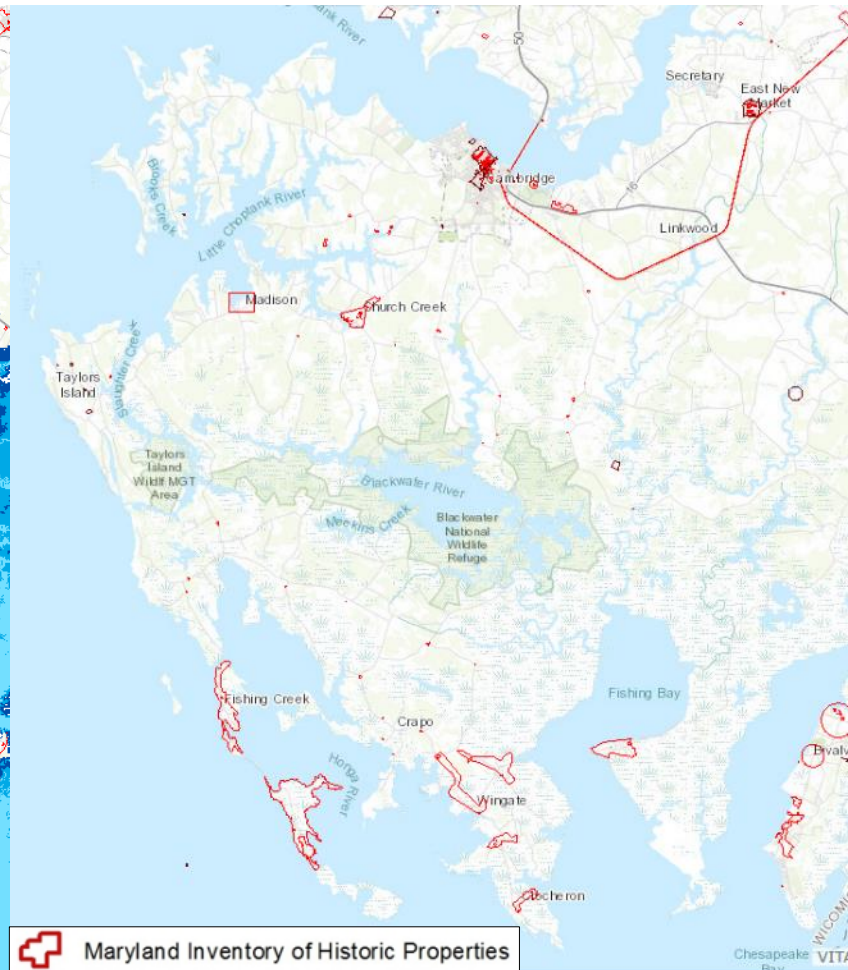
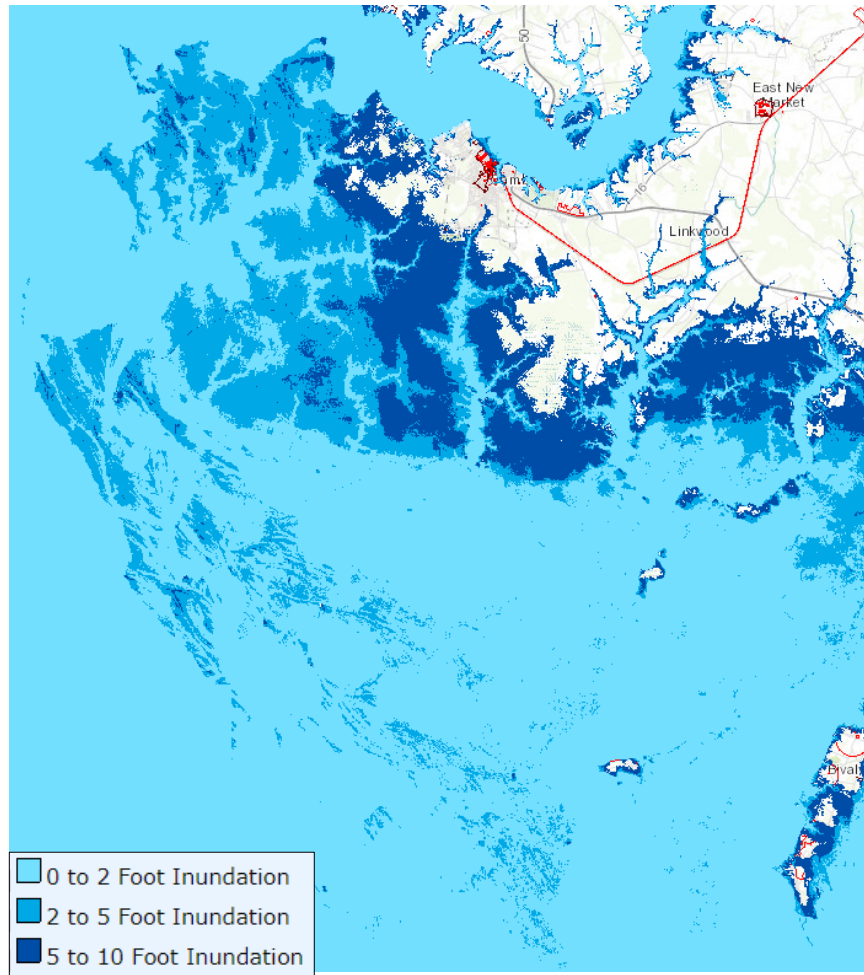
- Flood (including flash flood and nuisance flooding)
- Coastal hazards
 - Tropical storms
 - Hurricanes
 - Nor'easters
 - Heavy precipitation
 - Shoreline erosion
 - Sea level rise
- Winter storm
- Tornado & other wind events
- Extreme temperature



Left: The roof of the B&O Railroad Museum in Baltimore collapsed due to the weight of snow from winter storms.

Right: Flooding at the Annapolis City Dock after Hurricane Isabel in 2003.

Historic Places at Risk



Dorchester County is especially vulnerable to sea level rise

These two maps show the location of *known* historic places as they are now and as they will cease to be with varying levels of sea level rise

There are many more historic places at risk that are unrecorded and potentially unknown

Historic Places at Risk

Anne Arundel County's Historic Properties Threatened by Increased Flooding

Recorded Historic Site*	0-2 ft Inundation	0-5 ft Inundation
Structures/Dwellings	12	26
Bridges	8	11
Lighthouses	4	4
Historic Roads	1	2
Historic Districts	12**	12**
Federal – US Coast Guard & US Navy resources	10	19
Total	47	74

*Properties are listed in the Maryland Inventory of Historic Places

****There are hundreds of properties at risk in these 12 historic districts.**

Source: Anne Arundel County Sea Level Rise Strategic Plan, November 2011

Archeological Sites at Risk



Prehistoric burials eroding out of river bank (below)



Prehistoric shell midden eroding out of a river bank (above)

Archeological Sites at Risk

Be sure to plan for impacts to archeological sites too. Above-ground cultural resources are not the only ones at risk!

Anne Arundel County's Archaeological Sites Threatened by Increased Flooding

Cultural Affiliation	0-2 ft Inundation	0-5 ft Inundation
Prehistoric	192	215
Historic	80	91
Prehistoric & Historic	43	52
Unknown time period	56	64
Total	371	422

Source: Anne Arundel County Sea Level Rise Strategic Plan,
November 2011

Engage the Public



- A voice for everyone to decide what is significant in their community
- “Significance” is relative
- Local knowledge may not be common knowledge
- Promotes understanding about historic places
- Conduct early and often during the planning process
- Develop an outreach strategy for soliciting feedback in a variety of ways from a broad swath of the community

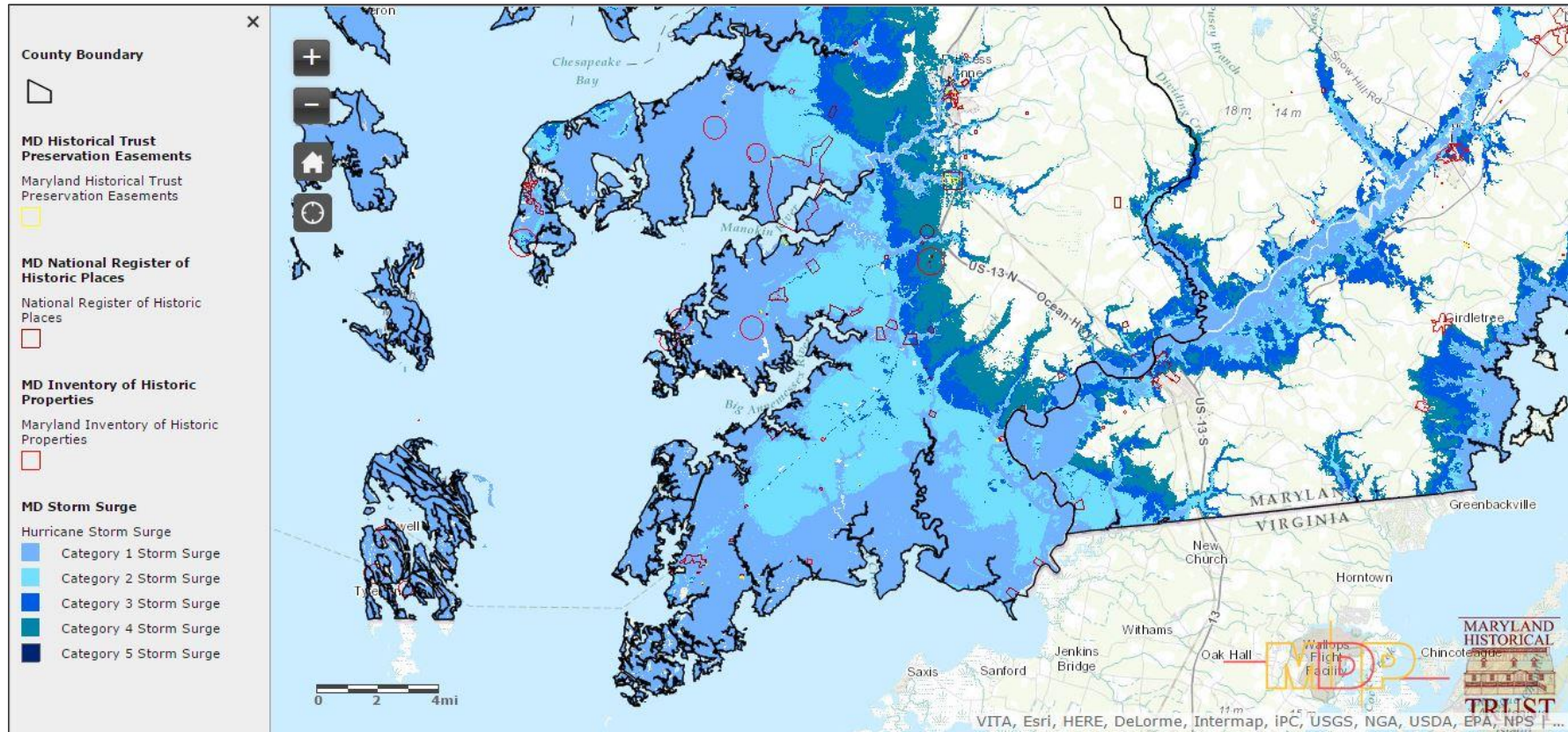
Document and Assess Flood Risks to Historic Places



Once the Planning Team is in place, they should begin the documentation process to identify known historic places at risk

- Gather information on historic contexts from MHT and preservation planning documents
- Compile an inventory of known historic places at risk – start with information obtained from the Maryland Inventory of Historic Properties
- Identify hazards and hazard areas from you local hazard mitigation plan
- Conduct public engagement to gather information on important unrecorded historic places

Document and Assess Flood Risks to Historic Places



Somerset County map depicting the estimated limits of category 1 through 5 storm surge. By adding the historic places to the storm surge map, you can quantify the risk storm surge poses to historic places.

Document and Assess Flood Risks to Historic Places



- Conduct a combined survey of historic places and assessment of flood risk on a property-by-property basis, if possible, to get the most accurate risk information
- The form on the right was created by MHT to gather both types of information – but is not a substitute for completing an Maryland Inventory of Historic Properties form

**MARYLAND HISTORICAL TRUST
ARCHITECTURAL SURVEY FORM FOR
HAZARD MITIGATION PLANNING**

Name of Property: _____ Date of Visit: _____
Property Address: Street and Number _____
City/Town _____ County _____
Owner(s): _____
Owner Address: Street and Number _____
City/Town _____
State/ZIP _____
Owner Type: ☐ Public ☐ Private ☐ Both
Telephone: _____ Email: _____
Inspector's Name(s): _____ Telephone: _____
Inspector's Affiliation: _____ Email: _____

A. STRUCTURE TYPE, USE, AND PREVIOUS SURVEY
Category (e.g. bldg., site, object): _____ Current function: _____
MHHP Number _____ Listed in National Register? ☐ No ☐ Yes
In Listed National Register Historic District? ☐ No ☐ Yes Contributing Resource? ☐ No ☐ Yes
Historic District Name: _____
Local District Name: _____

B. STANDING STRUCTURES ON THE PROPERTY
Please list the MHHP Number (if applicable), number, type and condition of standing structures on the property.
Number of Standing Structures: _____
1. _____ (main structure)
2. _____ 5. _____
3. _____ 6. _____
4. _____ 7. _____

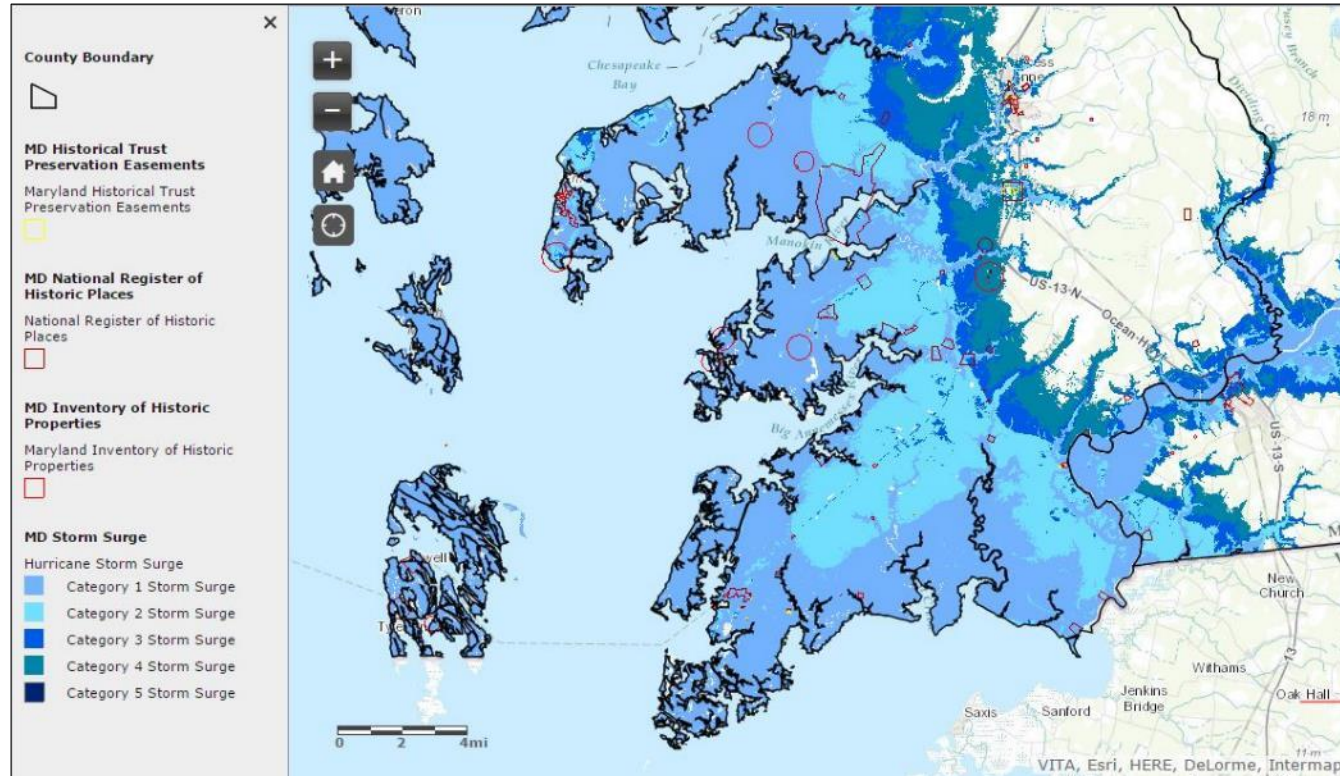
C. GEO-LOCATION
Quad attached: ☐ No ☐ Yes Quad Name: _____ Quad Scale: _____
Latitude _____ Longitude _____

D. LEGAL DESCRIPTION AND PROPERTY VALUATION
Tax Map: _____ Tax Parcel: _____ Tax ID No.: _____
Market Value (Bldg): _____ Valuation Date: _____ Total Square Feet: _____
Square Footage (SF) Estimated? ☐ No ☐ Yes
Valuation & SF Source: _____

MHT - Architectural Survey Form for Hazard Mitigation Planning August 2015

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Document and Assess Flood Risks to Historic Places



A more detailed assessment should be conducted when you survey historic places to also identify the vulnerabilities to hazards, like storm surge, on a property-by-property basis.

For example where is lowest opening that floodwaters could enter the property?

How deep will the storm surge be and what areas of the property will be inundated (e.g. basement, first floor)?

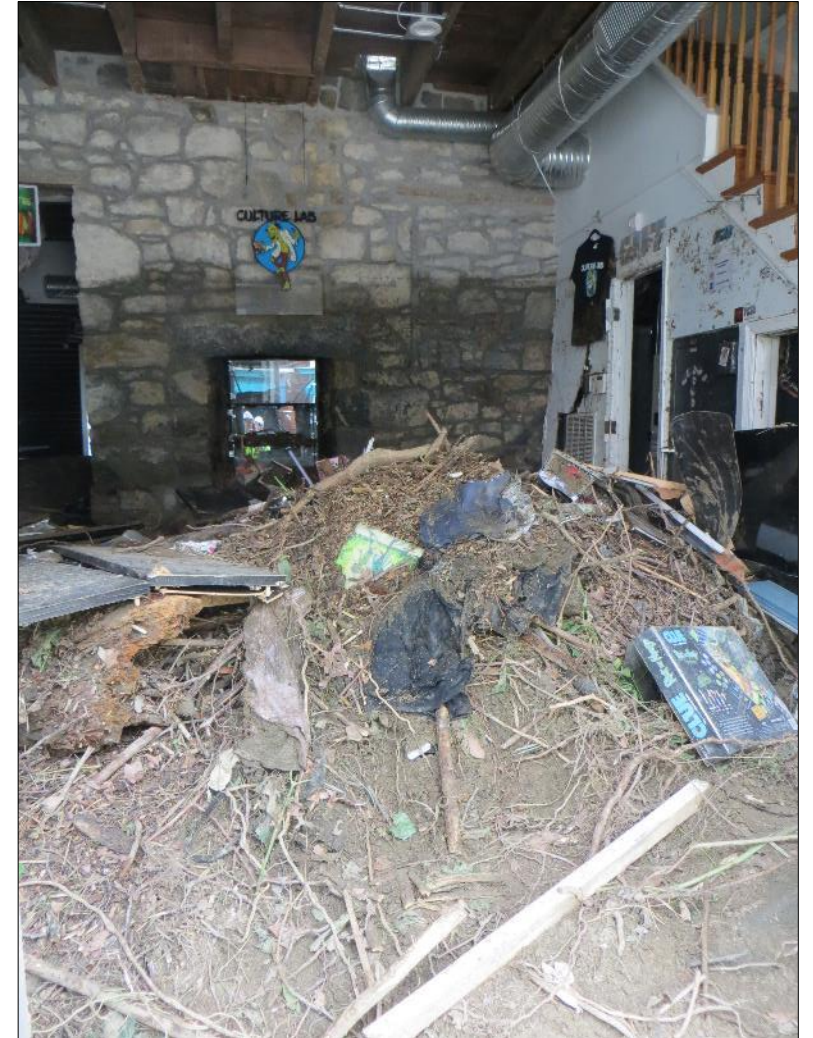
Knowing the specific vulnerabilities will help you to develop mitigation actions later during the planning process.

Estimating the Economic Impact

Part of the risk assessment involves quantifying the damage (in dollars) that will result from a flood of a certain magnitude

The cost of the impact on a historic place is important because it is used to show how much money could be saved (losses avoided) if a project protected that place from that hazard

FEMA will only fund mitigation projects that are cost-effective (the benefits exceed the cost of the project)



Estimating the Economic Impact

Replacement value is the cost to completely rebuild/recreate the damaged building

This is problematic for historic places because:

- Uniqueness
- Lack of availability of building materials
- Irreproducible quality of building materials
- Specialized construction skills
- Custom built with custom features common in structures built before housing industry booms in or about the 1940s
- Experimentation with materials in the 1950s & 1960s (Mid-Century Modern)

Module 4, Estimating the Economic Impact of Flooding on Historic Resources, will provide a more in depth look at this component of the risk assessment

Establish Local Preservation Priorities

After completing the risk assessment, you must prioritize which vulnerable historic places to protect because it's not financially or logistically possible to protect them all

- Identifying the most important historic places of the community is a process that should be undertaken by the planning team in conjunction with the public
- The “value” of a historic place is a combination of social, cultural, and economic factors
- Historic places that are meaningful places to the public might not be obvious to the planning team
- Public sentiment is as valid a factor in determining priorities as economic importance, level of significance, and integrity

Develop Mitigation Goals & Objectives

Now that the Planning Team knows the vulnerabilities of the historic places at risk and, with the public, has prioritized which places to protect, the next step in the planning process is to develop mitigation goals and objectives

Goals – Broad statements related to the protection of historic places that describe what the hazard mitigation plan is trying to achieve

Enhance the ability of historic places to withstand a flood

Objectives – Specific, measurable strategies, for protecting historic places

Promote regular maintenance to reduce vulnerability to flood

Selecting Mitigation Options

After establishing mitigation goals and objectives, the Planning Team should identify mitigation actions (projects) to meet those goals and objectives

Hazard mitigation actions must:

- Address the vulnerabilities identified during the risk assessment
- Be long-term solutions
- Be cost-effective
- Not cause secondary impacts to surrounding properties



Source: MEMA, 2016

Mitigation Actions – the Preservation Perspective



- Should avoid adverse impacts to the historic integrity of the structure as much as possible
- Should consider the effect on the structure and its surroundings
- Should be coordinated in consultation with the SHPO, local preservation planners, and Historic Preservation Commissions

This historic log cabin was relocated decades ago and was nearly destroyed when a culvert blew out during a flash flood. It is being moved again to a safer place of a similar setting and will occupy a similar orientation at its new location. The move was conducted after consultation with the SHPO.

Source: Howard County, 2018

Property-Specific and Community Wide Mitigation Actions

Property-Specific

- Protects a single property
- May be part of a community's traditional approach to property protection
- Will likely involve a compromise between preservation and protection
- Example: setting the building on an elevated foundation; changes to make the building flood-damage resistant; moving the building to a new location

Community-Wide

- Protect many properties
- Encourages community support
- Allows for continued occupation of a place
- May harm historic context
- Can be expensive
- Examples: stormwater improvements, shoreline protection, zoning and code revisions

Write, Adopt & Implement the Plan

Writing the Plan

- Usually done by contractors under the guidance of the local office of emergency management
- Planning Team should provide technical assistance, as requested, and review of sections that address historic places

Adopting the Plan

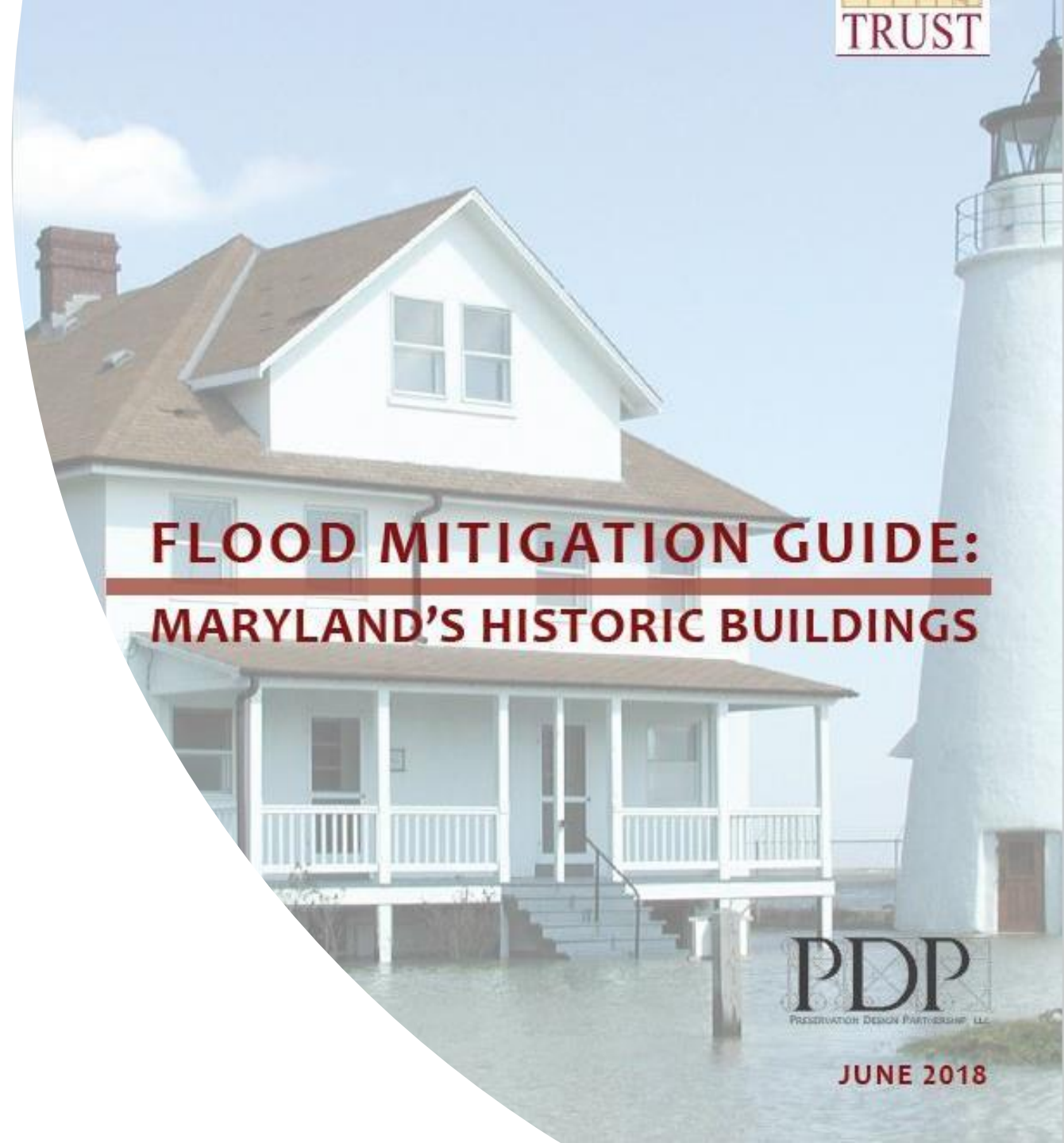
- The plan must be approved by MEMA and FEMA, prior to adoption
- The plan will be adopted by ordinance by the County Council and its local jurisdictions

Implementing the Plan

- Apply for grants or allocate funding, develop RFP, and select a contractor to implement your mitigation actions

Training Modules – *Flood Mitigation Guide*

- Module 1 – Introduction to Protecting Historic Resources from Floods
- Module 2 – Evaluate Planning Options & Recruit a Planning Team
- Module 3 – Risk Assessment for Historic Resources
- Module 4 – Estimating the Economic Impact of Flooding on Historic Resources
- Module 5 – Establishing Preservation Priorities and Developing Mitigation Goals & Objectives



TRUST

FLOOD MITIGATION GUIDE: MARYLAND'S HISTORIC BUILDINGS

PDP
PRESERVATION DESIGN PARTNERSHIP, LLC

JUNE 2018

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<http://mht.maryland.gov/weatherit.shtml>



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